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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,111	06/26/2006	Roland Burk	016906-0399	8877

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EXAMINER	
RUBY, TRAVIS C	
ART UNIT	PAPER NUMBER
3744	
MAIL DATE	DELIVERY MODE
08/18/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/540,111	BURK ET AL.	
	Examiner	Art Unit	
	TRAVIS RUBY	3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 June 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17 and 19-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17 and 19-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2, 4-10, 11, 13, 14, and 16-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karl (US2001/0003311A1) in view of Jones (US4655051).

Re Claim 1. Karl teaches a method for operating an air conditioning system of a vehicle, comprising:

circulating in a circuit a fluid (refrigerant) to condition an airstream;

operating the circuit in a cooling mode or a heating mode (Paragraph 24), wherein, in the heating mode, the circuit includes a condenser or a compressor (ref 4), a heat exchanger (ref 26), and an intermediate store (ref 13) (Paragraph 29 and 30);

circulating, in an evaporator (ref 11), the fluid (Paragraph 26); and

controlling the circuit, such that the intake pressure of the condenser or the compressor at least partially overshoots a saturation pressure in the circuit caused by the ambient temperature, (Paragraph 6 states that the system is ran at a supercritical pressure and Paragraph 35 states that the system is controlled either by the compressor or the expansion valve based on sensors to achieve the supercritical pressure state.).

Karl teaches an evaporator (ref 11) and an intermediate store (ref 13) but fails to specifically disclose that the volume of the evaporator is smaller than a storage volume of the intermediate store. Jones teaches the volume of the evaporator is smaller than a storage volume of the intermediate store (Column 1 lines 51-54; Since the receiver must have a large enough volume to store all refrigerant in the system, and since there are two heat exchangers in a system, the receiver would have a larger volume than the evaporator). It would have been an obvious matter of design choice to make the evaporator volume smaller than the intermediate storage volume, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955). In addition, it is obvious that the intermediate storage would have to be bigger than the evaporator in order to accommodate the entire refrigerant that flows out of the heat exchangers as taught by Jones.

Re Claim 2. Karl teaches operating the circuit during the heating mode in a dextrorotary triangulation process, wherein an exit side of the condenser or the compressor (ref 4) connects to an entry side of a control valve (ref 22), an exit side of the control valve connects to an entry side of the heat exchanger (ref 26), an exit side of the heat exchanger connects to an entry side of the intermediate store (ref 13), and an exit side of the intermediate sore connects to an entry side of the condenser or the compressor (ref 4) (see Figure 1, Paragraphs 29 and 30).

Re Claim 4. Karl teaches dividing the fluid in the circuit into at least one active part (branch 1 & 3) and at least one passive part (branch 1 & 2) while in the heating mode (Paragraph 29).

Re Claim 5. Karl teaches activating the heating mode; and routing the fluid out of the passive part of the circuit into the active part of the circuit (Paragraph 31).

Re Claim 6. Karl teaches routing out the fluid of the passive part of the circuit into the active part of the circuit when a predeterminable threshold value for the intake pressure in the active part of the circuit is undershot (Paragraph 31 and 35 teach a pressure sensor is used to control the air conditioner).

Re Claim 7. Karl teaches transferring to transfer the fluid out of the passive part of the circuit into the active part of the circuit by changing the circuit operated in the heating mode over to the cooling mode (Paragraph 31 and 35).

Re Claim 8. Karl teaches transferring the fluid out of the passive part of the circuit into the active part of the circuit by changing the circuit operated in the heating mode to a laevorotatory triangular process (Paragraph 31 and 35).

Re Claim 9. Karl teaches operating the circuit in the cooling mode or in the laevorotatory triangulation process up to the undershooting of a settable threshold value, and changing the

circuit to the heating mode again after the undershooting of the threshold value. (Paragraph 31 and 35 teach a pressure sensor is used to control the air conditioner).

Re Claim 10. Karl teaches predetermining the threshold value for an intake pressure and/or for a high pressure and/or for a hot-gas temperature at the condenser or the compressor (Paragraph 31 and 35 teach a pressure sensor is used to control the air conditioner).

Re Claim 11. Karl teaches the threshold value of the intake pressure can be controlled by a pressure sensor which is reliant on ambient conditions, but fails to specifically teach being 3 bars below the saturation pressure. It would have been obvious to one having ordinary skill in the art at the time of invention to have an adjustable threshold pressure, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Re Claim 13 & 14. Karl teaches an air stream through the evaporator/gas cooler but fails to teach that it can be reduced after the changeover to the cooling mode or to the laevorotatory triangulation process. It would have been obvious to one having ordinary skill in the art at the time of invention was made to adjust the fan speed, since it has been held that the provision of adjustability, where needed, involves only routine skill in the art. In re Stevens, 101 USPQ 284 (CCPA 1954).

Re Claim 16. Karl teaches an air conditioning system for a vehicle (Figure 1) comprising: a circuit (Figure 1) operable in a cooling or heating mode, configured to circulate a fluid (refrigerant), the fluid configured to condition an air stream (Paragraph 24), wherein in the heating mode, the circuit includes: a heat exchanger (ref 26), an intermediate store (ref 13), and a condenser or a compressor (ref 4) for the intermediate storage or for the condensation of the fluid, and an evaporator (ref 11), connected to the circuit, for fluid reception (Paragraph 26), the condenser or the compressor is configured to operate at an intake pressure, that is higher than the saturation pressure in the circuit, caused by the ambient temperature (Paragraph 35).

Karl teaches an evaporator (ref 11) and an intermediate store (ref 13) but fails to specifically disclose that the volume of the evaporator is smaller than a storage volume of the intermediate store. Jones teaches the volume of the evaporator is smaller than a storage volume of the intermediate store (Column 1 lines 51-54). It would have been an obvious matter of design choice to make the evaporator volume smaller than the intermediate storage volume, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955). In addition, it is obvious that the intermediate storage would have to be bigger than the evaporator in order to accommodate the entire refrigerant that flows out of the heat exchangers as taught by Jones.

Re Claim 17. Karl teaches a secondary side of the evaporator is included in a flow duct of the air stream (F2), and a primary side of the evaporator is connected to the circuit, and an exit side of the evaporator is connected to the intermediate store (ref 13), and wherein a nonreturn

valve (ref 12) is interposed between the evaporator and the intermediate store (Paragraph 26 & 29).

Re Claim 19, and 26. Karl teaches an evaporator (ref 11) and an intermediate store (ref 13) but fails to specify the size of each component. Jones teaches the volume of the evaporator is smaller than a storage volume of the intermediate store (Column 1 lines 51-54). It would have been an obvious matter of design choice to make the evaporator volume smaller than the intermediate storage volume, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955). In addition, it is obvious that the intermediate storage would have to be bigger than the evaporator in order to accommodate the entire refrigerant that flows out of the heat exchangers.

Re Claim 20. Karl teaches a control device (ref 31 Figure 2) arranged between the heat exchanger and the intermediate store (Paragraph 32).

Re Claim 21. Karl teaches a pressure sensor (ref 40) is assigned on the discharge side of the condenser (ref 4). Karl discloses the claimed invention except for locating the pressure sensor at the intake side of the compressor. It would have been obvious to one of ordinary skill in the art at the time of invention was made to locate the pressure sensor on the intake side of the compressor, since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

Re Claim 22. Karl teaches the circuit is subdivided into at least one active part (branch 1 & 3) and at least one passive (branch 1 & 2) part (Paragraph 29).

Re Claim 23. Karl teaches the active part is connected to the passive part by control device (ref 22), configured to open when the fluid quantity in the active part of the circuit overshoots a predeterminable threshold value (Paragraph 31 and 35 teach a pressure sensor is used to control the air conditioner).

Re Claim 24. Karl teaches that the condenser or compressor (ref 4) is connected to the evaporator on the exit side via a control means (ref 31) and on the entry side (ref 30) via an associated controllable connecting line (ref 3), after the opening of the control means gaseous fluid passes into the evaporator and forces liquid fluid out of the evaporator into the active part of the circuit (Figure 2, Paragraphs 31-32, 35).

Re Claim 25. Karl teaches the threshold value of the intake pressure can be controlled by a pressure sensor which is reliant on ambient conditions, but fails to specifically teach being 5 bars below the saturation pressure. It would have been obvious to one having ordinary skill in the art at the time of invention to have an adjustable threshold pressure, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Karl (US2001/0003311A1) in view of Jones (US4655051) and in further view of Hesse (US2003/0177778A1).

Re Claim 3. Karl teaches that the compressor can be of a variable capacity and that the pressure of the system can be regulated, it fails to specifically teach a pressure range of 10 bar to 110 bar. Hesse teaches though that the intake pressure can be controlled in a range of about 20 bars (Paragraph 15). It would have been obvious to one having ordinary skill in the art at the time of invention to have an adjustable intake pressure, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

4. Claims 12 & 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karl (US2001/0003311A1, will be referred to as Karl 'A1) in view of Jones (US4655051) and in further view of Karl (US5737930 will be referred to as Karl '930, as cited by applicant).

Re Claim 12. Karl 'A1 fails to teach the cooling mode being operated for a predeterminable period of time, the circuit being capable of being changed over to the heating mode again after the expiry of the period of time. Karl '930 teaches the cooling mode being operated for a predeterminable period of time, the circuit being capable of being changed over to the heating mode again after the expiry of the period of time (Column 4 lines 30-33). In view of Karl '930's teachings it would have been obvious to one of ordinary skill in the art at the time of

invention to include a switchover time to Karl 'A1 since it allows for optimal efficiency and comfort of the system.

Re Claim 15. Karl 'A1 fails to teach that a pressure equalization can be carried out in the circuit after the return to the heating mode. Karl '930 teaches that a pressure equalization can be carried out in the circuit after the return to the heating mode (Column 4 lines 1-18, branch 13 helps equalize the pressure when switching between the two modes). In view of Karl '930's teachings it would have been obvious to one of ordinary skill in the art at the time of invention to include a pressure equalization since it prevents slugging the compressor and enhances the safety of the system.

Response to Arguments

5. Applicant's arguments with respect to above claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to TRAVIS RUBY whose telephone number is (571)270-5760. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frantz Jules or Cheryl Tyler can be reached on 571-272-6681 or 571-272-4834. The

fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Travis Ruby/
Examiner, Art Unit 3744
/Frantz F. Jules/
Supervisory Patent Examiner, Art Unit 3744